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322 285 labors. If this place is not shady, the owner erects a shade of coconut mats (*takapau*) on poles to protect workers and canoe timbers. Caulking material, lashing sennit, and canoe timbers are provided by the owner. The expert provides his own implements. (For the food financing and payment for the completed canoe, see p. 92).

322 5-54 461 Expert carpenters value their good name as quick workers and rarely dawdle over a job, because this would lay them open to criticism and would militate against further building contracts. As long as the expert and his assistants work conscientiously they are well fed. There are no songs or sayings about lazy carpenters, but a quick and skillful expert will be sure to have his name praised in a chant. Informants suggested that about one moon of continuous work with shell adzes was formerly required to finish an average-sized canoe.

322 531 Some experts possess a trade mark (*waka'ailonga*) which they carve roughly on the front of the bow piece of canoes they build. Such a mark is the head of a fish, the beak of a bird, or some other part of an animal. Tualai puts a sign of two crossed hands on the wave guard (*malae puka*) of each canoe he builds.

552 Canoes may be named by their owners. An appropriate canoe name is *Te Mango* (Shark) or *Te Pungo-o-Witi* (Coral-rock-of-Fiji). This name is mentioned to the people who attend the canoe-finishing feast (*imu kai waka'aliega*) and the canoe is henceforth known and referred to by this name. Today some men roughly carve or paint the name on the bow of the canoe.

Canoe Crew

502 793 The canoe crew is known collectively as *tuoo vaka*. Specialized names for crew members of the flying-fish canoes have already been mentioned (p. 58). In general, the captain of the canoe crew is termed *tau muli vaka*. He is the steersman and leader of the crew. Formerly, especially for long distance voyages, he was usually a priest (*tuta*). If he did not have priestly powers, one of his crew, who was a priest, consulted the gods in times of need.

502 The second member (*wuliwuli*) of the crew (moving from stern to bow) who sits on the aft cross boom (*kaukau ki muli*) is second in command and corresponds to mate. Should the captain die on a long voyage, he automatically takes command of the canoe. If the captain lays down his steering paddle to fish or rest, the *wuliwuli* takes up the steering. He helps to steer in strong seas or a high wind, and uses his paddle as a make-shift leeboard when the canoe is sailing by the wind. He further tends the main sheet (*tuusu*) when the sail is up, watching wind pressure and direction.

The group of paddlers amidships are termed collectively *tatau*. They are

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285 Lito makakakaka: brittle plaiting material, easily snapped with slight strain.
Panga punipuni: closely plaited mat.
Panga taupupa: uneven rough plaiting.
Panga matalatala: loosely plaited mat.
Yiyinu: even, straight plaiting secured through uniform tension.

In the commencement stages of plaiting, the worker uses her toes to keep elements steady until she has established a firm working edge. The finished portion of large mats is folded under as the work progresses or else kept flat under heavy stone weights (*matu maunga*) so that the working edge may be brought within reach of the hands. Some workers prefer to lay fine plaiting on a smooth board (*papa* or *palepale*). Straight edges, either right or left, are difficult to produce, and a woman's reputation as a plaiter is 555 285 based on her ability to make them. Of the good plaiter, it is said that she has skilled hands (*lima pateka*), busy hands (*lima tateka*), or quick hands (*lima tovili*). These terms are used in chants by the man who wishes to comment on the plaiting skill of his mistress.

285 531 The plaiting of large mats is an arduous task. By continuous work a woman can plait a mat 6 feet by 4 feet in about 30 hours.

Design is obtained by using alternate elements of *lito* pandanus and *lau-uilu pakapaka* pandanus, or by the use of overlaid or through and through elements of red dyed pandanus. The Pukapukan plaiter makes little use of contrasting check and twilled plaiting to make pleasing designs in pandanus work, save in the building-up of a few blocked geometrical designs. The 386 method of preparing red dye and of dyeing (*pani ke kukula*) material for 285 designs is as follows:

The worker scrapes from the roots of the *nonu* plant the dirt, rootlets, and dark brown outer bark. She places a coconut-leaf mat (*lavalava*) on the ground, covers it with *puapua* leaves, and scrapes the roots a second time to remove the dark yellow bark, which falls onto the leaves. Hot ashes from a fire of coconut butts are added to the bark scrapings and the whole well mixed together with the hands. The mixture is placed in a wringer (*tauanga*) of coconut husk fiber and the liquid wrung out into a wooden bowl. The wrung-out bark mixture (*ota*) is placed aside. Strips of *laukie* pandanus are now passed through the liquid, then rolled on the hand and placed back into the liquid. *Puka* leaves are packed on top of the rolls of pandanus and the wrung-out bark is placed on the leaves. The whole is set aside for 24 hours. The bowl is then opened, each roll of material is passed through the hands to smooth the dye on the strip, and placed back in the bowl. Sea water is poured on the wrung-out bark material which is pressed (*lomi*) and mixed with the water. It is then wrung out for a second time and the rolls resteeped for a second 24 hours. The rolls are finally removed from the dye, smoothed with the hands, placed unrolled on a coconut leaf mat (*palapala*) and allowed to dry in the shade. When dry, the material is ready for use.

283 531 Old Pukapukan designs (*kave*) are shown in figure 14. A group of old women recognized only these designs as definitely old. The Pukapukan worker, however, shows great skill in adapting or inventing new designs. A sampler of designs (C8208) contains 32. The names of some of the newer

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designs indicate the extent to which the environment furnishes ideas for design: *yitu iku*, fish tail; *uku*, two-ply twisted sennit; *laulau*, coconut leaf; *mangamanga*, spider; *puyipuyi*, tobacco pipe; *polotiko*, house veranda; *kowatau*, sennit anchor line; *malo pula*, spotted malo.

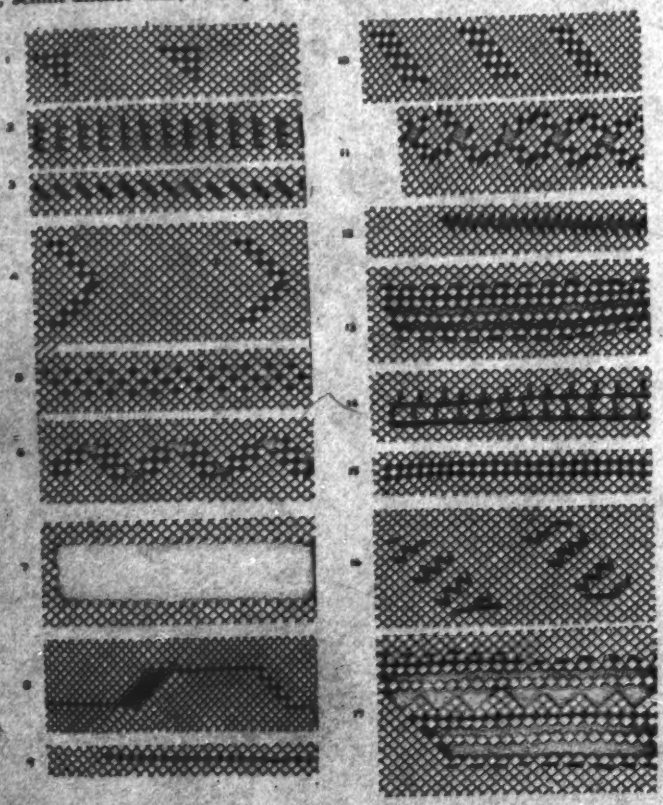

FIGURE 14.—Old Pukapukan pandanus mat designs. Native terminology with available translations: 1, *matatala*, pandanus leaf spines; 2, *te lau uvuu wakauike*; 3, *alounga*; 4, *kauua*, shark-skin implement for working pearl shell; 5, *koyi tuila*, flash of lightning; 6, *matuakalou*, variety of sea cucumber; 7, *koyi muanua*, rainbow stripe; 8, *tuc kaue*; 9, *moamoa*, a small blue cigaret-shaped coral growth; 10, *lauvuti*, banana leaf; 11, *paiokiole*, diamond-shaped; 12, *molokau*, centipede; 13, *muanua*, rainbow; 14, *takavelangi*, stone resting platform; 15, *kauamalo*, five-ply braided sennit malo; 16, *alukauua*, a bundle of *kauua* implements; 17, *langi pini*.

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285 352 Sleeping and floor mats are made of all three pandanus materials in various sizes for children and adults. The name of the material is added to the general name for a mat (*panga*) to distinguish the various types. Pukapukan mats in Bishop Museum are:

Name	Specimen Number	Material	Size	Wefts to Inch	Use
Panga lanpua	C8070	lauwilu	5'5" square	6	Crawling mat for child
Panga lauwilu ava	C8071	lauwilu	1'11" × 1'6"	5	Mat on which newborn infant is laid
Epaepa	C8074	lauwilu	5' × 6'6"	5	Durable undermat for sleeping
Panga lito	C8114	lito	5'3" × 4'7"	5	Floor mat
Panga lito	C8122	lito	5'8" × 3'7"	5	Floor mat
Panga lauwala pukapuka	C8123	lauwala pukapuka	4'10" × 4'	3	Coarse foundation mat placed under epaepa for sleeping
Panga kanoni (mixed) lauwilu ma lito	C8166	lauwilu and lito	5'1" × 3'3"	6	Durable sleeping mat
Panga kie wete	C8121	kie wete	5'4" × 4'	6	Soft mat used to cover body when sleeping

285 171 All the above mats have the exposed sinistral finish described by Buck (27, fig. 118,c), except the last which presents two interesting variations in the fundamental plaiting technique:

> It is made of single elements to obtain a soft surface, but in order to bind the edges securely, the Samoan fine mat technique of a five-weft braid finish is used in defining the lower border. The commencement edge on the reverse side of the mat follows the method described by Buck (27, fig.161) and the continuation is the turned back fringe described by Buck (27, fig. 162 right). In the Pukapukan mat the dropped sinistrals are cut off flush with the lower border. The upper, finishing edge follows the Samoan method (27, figs.163,164) with the exceptions that the Pukapukan mat has a five-weft braid finish; the fringe ends produced by the projecting sinistrals and dextrals are cut off flush with the border; the right upper corner is not braided into a tail but the last three working dextrals are roughly interlocked by carrying the third working dextral from the end over the corner of the mat and pushing it under one sinistral, then with a forward turn, pushing it under two dextrals and cutting the ends off flush with the edge. The last two working dextrals from the end are turned back at the edge and pushed underneath the third dextral where it passes to the other side of the mat.

285 531 All the mats have overlaid or through and through designs of the customary red-dyed pandanus material. Most of the designs are old but several are obviously modern, for example the turtle (*wonu*) and the house side (*talowale*) designs. The mats are more heavily laden with design than is usual because the plaiters felt that many designs were appropriate for what they knew would be museum pieces.

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285 591 The use of plaited mat material for canoe sails is mentioned on page 181. Informants stated that formerly four light mats were sewn together (*tui*) with strips of pandanus and a fish bone needle to make a sort of rough mosquito net (*uea*).

285 292 Malos made of soft pandanus *kie* material (*malo kie*) were formerly worn by the men for dress occasions. They were worn with the malo of tenuit (*malo kaua*) for wrestling contests and fighting (pl. 3, *c*). Three malos in the Bernice P. Bishop Museum collection are:

Malo 3501. 11 feet 5 inches long, 6½ inches wide, fringe on upper and lower edges 1¾ inches deep. Wefts 12 to the inch. *Paiokiole* pattern. The technique follows the Samoan fine mat style with a lower border commencement of a three-weft braid, the dextral and sinistral elements functioning as fringe (pl. 4, *B*). The top border is a three-weft braid finish, the dextrals and sinistrals again forming a fringe. The working dextrals on the right upper corner are secured with two overhand knots and are not braided. (See 27, figs. 161, 163, 164.)

Malo B3662. 14 feet 4 inches long, 7 inches wide, upper and lower fringe 1¾ inches deep. Wefts 12 to the inch. *Paiokiole* pattern. The technique varies slightly from the previous malo in that the three-weft braid fixations are worked on the reverse side, so that the garment was probably turned during plaiting. This is further evidenced by the fact that the knotted tail-finish is formed on the right lower corner. Not only the lower and upper edges, but the right side as well, have the braid fixation and fringes. It is possible that the left side was plaited in a similar fashion, making the similarity to the Samoan fine mat clear, but the left side is now undefined and ragged, perhaps eaten away by rats.

285 292 178 Malo Cb69. 6 feet 8 inches long, 10½ inches wide, upper and lower fringes about ½ inch deep. Wefts 8 to the inch. *Paiokiole* pattern. This malo (pl. 4, *C*) was made as a sampler which explains its shortness. The material is soft and pliable, but the modern workmanship is rough compared with the two old malos just described; these malos are no longer made in Pukapuka today and thus the women are not very skilled at the work. The top and bottom edges are fixed by a five-weft braid, the left and right edges are given the customary mat turn. The right upper corner finishing dextrals are knotted.

The design material in all three malos is not overlaid but forms plaiting elements. A fourth malo examined in the field corresponded in all particulars to the first two malos:

285 292 It was 12 feet 7 inches long and 8 inches wide and had the *paiokiole* design. An informant stated that this malo was one of several made by his mother and given him when he attained sociological adulthood (*uekatoa*) about 50 years ago. He suggested that formerly some malos were made 5 fathoms or more long, especially those that might be needed for fighting. I neglected to verify this statement, but if true it means that a malo of such length wound round the waist would have formed valuable defensive equipment against spear thrusts.

Edge-Partington (8, 2d ser., pl. 38, no. 4) figures a typical Pukapukan malo in the British Museum, 8 feet long, 10 inches wide, and with the usual *paiokiole* design.

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kerosene tin is also employed to increase the volume of sound for these dances. The wooden gong has been taken over by the church and is used to sound the time for family prayers and curfew each day.

WEAPONS

All Pukapukan weapons were made of wood. They consisted of two types of spear, a heavy throwing stick and a long billet club. Bow and arrow, and shield were unknown.

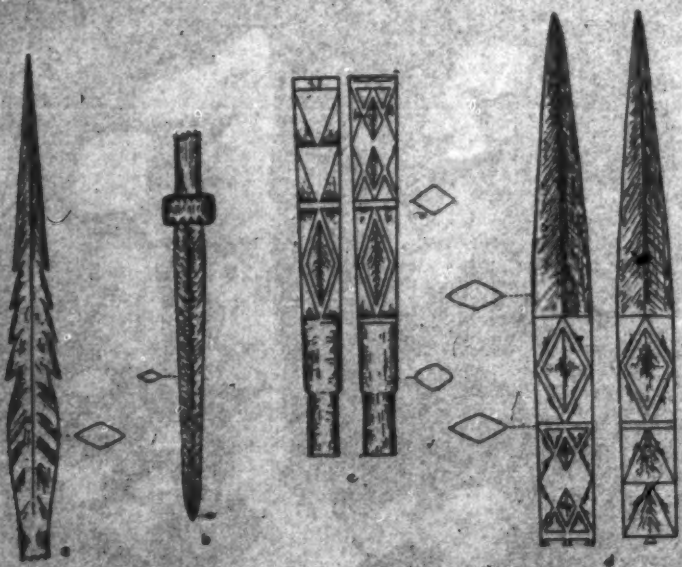

FIGURE 31.—Wooden spears. *a*, point of coconut wood spear (*tao*) (C2109): sharp point with sharp lateral edges, blunt mesial edges; barb commences 11¾ inches from point; barb ridges merge into handle of spear which has diameter of about 1¾ inches. *b*, elliptical guard, 17 inches from butt of spear, has greatest diameter of 2¾ inches, least diameter of 1¾ inches; butt of spear sharply pointed; doubtful whether elliptical guard is constant feature of Pukapukan spears; weight of spear 6⅛ pounds, length 7 feet 10 inches. *c*, middle section of spear (*pauelouelo*) of *watanava* wood (C2066): cross section becomes round, continuing thus to butt of spear; carving designs consist of triangular spear heads (*watatala*), single large lozenges (*paichiole*), and combinations of both; each section separated from following by raised transverse bar. *d*, joint section: sharpened with pronounced lateral and mesial edges. Weight of spear 4¼ pounds, length 9 feet 2¾ inches.

This is only example known of Pukapukan carving on implements or weapons; though modern it is probably authentic.

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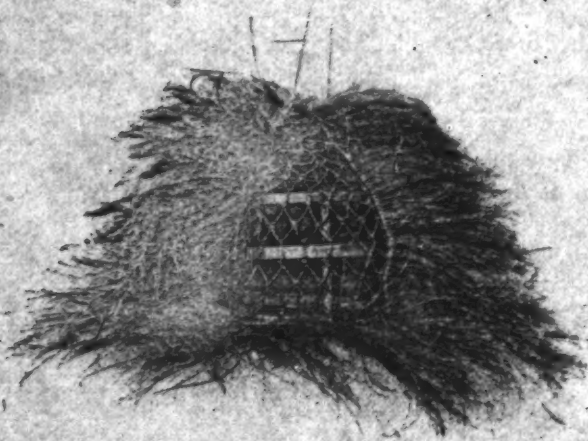

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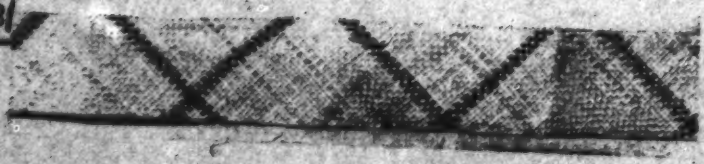

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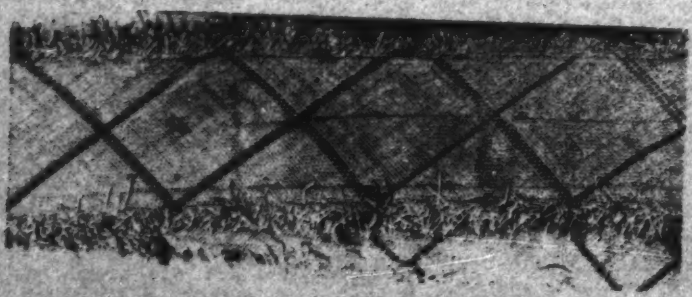

C

HAT AND MALO. *A*, SENNIT NETWORK HAT OF THE CHIEF, SHOWING COCONUT MIDRIB STRIPS OF FRAME, TWO-PLY TWISTED SENNIT NETTING, AND COCONUT FIBER FRINGE DECORATION. *B*, MODERN SAMPLER FOLDED TO SHOW WIDTH WHEN MALO IS DONNED. *C*, MALO OF FINELY PLAITED PANDANUS, OLD AND UNFOLDED. BOTH MALOS SHOW THE TYPICAL DIAMOND-SHAPED DESIGN.